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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,155	11/04/2005	Yasuhiro Chouno	033082M237	9205
441 7590 08/02/2007 SMITH, GAMBRELL & RUSSELL 1850 M STREET, N.W., SUITE 800 WASHINGTON, DC 20036			EXAMINER CHANDRA, SATISH	
			ART UNIT 1763	PAPER NUMBER
			MAIL DATE 08/02/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/522,155	Applicant(s) CHOUNO ET AL.	
	Examiner Satish Chandra	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 9 and 12 - 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 9 and 12 - 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 May 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>8/05, 7/05, 1/05, 4/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 is rejected because it depends upon claim 10, which has been canceled. For the purpose of examination, The Examiner is taking it as if it depends upon claim 1 and not on the canceled claim 10.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farrens et al (US 6,780,759) in view of Sekizuka (US 5,368,648), Chan et al (US 6,460,404) and Parkhe et al (US 6,743,473).

Regarding claim 1, a substrate processing vessel 100 (Fig 1) for processing therein a substrate 2 (shown in phantom lines) with a processing fluid, comprising: a vessel body; a cover adapted to be separatably and hermetically joined to the vessel body to define a processing space 172 together with the vessel body;

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a plurality of substrate support rods 154 incorporated into the vessel body; and a driving device 152 (actuator, Column 6, lines 19 – 24) adapted to vertically move the substrate support rods between a first vertical position and a second vertical position; wherein: each of the substrate support rods has a head adapted to support a substrate from below the same, and a shank extending downward from the head, the vessel body is provided with a plurality of vertical bores each having an open upper end opening into the processing space, and the shanks of the substrate support rods are vertically movably inserted in the bores, respectively, said substrate processing vessel has a sealing part 164, 165, 161 and 162 for preventing leakage of the processing fluid from the processing space,

Farrens et al does not disclose:

Regarding claim 1, a sealed space is defined on a side of the sealing part opposite to a processing-space side of the sealing part.

The sealed space comprises interior spaces of the vertical bores in the vessel body, said substrate processing vessel further comprises a suction line connected to the sealed space, and

Regarding claim 12, the joint of the vessel body and the cover is sealed by a first sealing member and a second sealing member disposed on an outer side of the first sealing member (two o-rings), and the sealed space is a space defined by the first and the second sealing member.

Sekizuka discloses:

Regarding claims 1 and 12, a sealed space on a side of the sealing part 8 opposite to a processing-space side of the sealing part 7 (Figs 1, 2) wherein the sealed space comprises interior spaces of the vertical bores in the vessel body, the said substrate processing vessel further comprises a suction line 14a connected to the sealed space and the joint of the vessel body and the cover is sealed by a first sealing member and a second sealing member disposed on an outer side of the first sealing member 31 (Fig 1) , and the sealed space is a space defined by the first and the second sealing member.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a double o-rings sealing space comprising a suction line in the apparatus of Farrens et al as taught by Sekizuka et al; provide the joint of the vessel body and the cover sealed by a first sealing member and a second sealing member disposed on an outer side of the first sealing member (two o-rings), and the sealed space is a space defined by the first and the second sealing member in the apparatus of Farrens et al as taught by Sekizuka et al.

The motivation for providing a double o-ring sealing space comprising a suction line is to check for leaks in the apparatus of Farrens et al as taught by Sekizuka et al.

The motivation for providing a double o-ring sealing space between the cover and the body is to check for leaks in the apparatus of Farrens et al as taught by Sekizuka et al.

Farrens et al and Sekizuka et al do not teach: a pressure gauge connected to the suction line.

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Chan et al teaches: a pressure sensor to detect leaks in a sealed space (Fig 1, Column 3, lines 26-29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a pressure sensor connected to the sealed space in the apparatus of Farrens et al and Sekizuka et al as taught by Chan et al.

The motivation for adding pressure sensor in the apparatus of Farrens et al and Sekizuka et al is to detect leaks in the sealed space as taught by Chan et al.⁷

Farrens et al, Sekizuka et al and Chan et al do not teach:

Regarding claim 1, support rods' (pins) heads unable to pass through the bore of the vessel body wherein the heads are configured to close the open upper ends of the bores at the first vertical position.

Regarding claim 2, support rods' (pins) heads are provided with an elastic sealing member to prevent the processing fluid from flowing into the bore at the first vertical position.

Regarding claim 3, upper surface of the vessel body is provided with recesses to receive the pins' head.

Regarding claim 4, heads of the pins are tapered.

Parkhe et al discloses:

Regarding claims 1 and 2, lift pins 438 (Fig 5, Column 16, lines 9 – 20) having a conical head that fits in the recess to seal the gap.

Regarding claim 3, in Fig 5, a recess to receive the head of the substrate pin held at the first vertical position wherein the bores of the vessel body extend downward

from the bottom surfaces of the recesses.

Regarding claim 4, a tapered pin-head (Fig 5) and the inner circumference (of each of the bores) adjacent to the upper end of each bore has a shape complementary to the tapered outer circumference of the tapered head. Each of the outer circumferences and each of the inner circumferences are in close contact with each other to form a seal to restrict the flow of purge gas.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide conical heads on the pins in the apparatus of Farrens et al, Sekizuka et al and Chan et al as taught by Parkhe et al.

The motivation for providing pins heads is to seal the bores of Farrens et al, Sekizuka et al and Chan et al.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farrens et al (US 6,780,759) in view of Sekizuka (US 5,368,648), Chan et al (US 6,460,404) and Parkhe et al (US 6,743,473) as discussed in claims 1 – 4 and 12 above and further in view of Sada (US 6,129,546).

Farrens et al, Sekizuka, Chan et al and Parkhe et al do not disclose:

Regarding claim 5, the substrate processing vessel comprising a plurality of substrate support members arranged on the vessel body to support the substrate from below the same, wherein substrate support surfaces of the substrate support members are at a height higher than that of substrate support surfaces of the heads of the substrate support rods at the first vertical position, whereby the substrate is supported

by the substrate support members without being supported by the substrate support rods when the substrate support rods are at the first vertical position.

Regarding claim 6, the driving device includes: arms respectively connected to the shanks of the plurality of substrate support rods projecting downward from lower ends of the bores of the vessel body, the arm being arranged under a bottom surface of the vessel body; and an actuator adapted to move the arms vertically.

Sada discloses:

Regarding claim 5, proximity pins 93 (Fig 5) are provided at positions above the mounting table 58 wherein the wafer G is mounted on these proximity pins 93. Fig 5 shows the substrate is supported by substrate support rods (proximity pins) wherein these proximity pins are at a height higher than that of substrate support surfaces of the upper ends of the pins at the first vertical position.

Regarding claim 6, a first driving cylinder 84 includes: arms (plate) 80 (Fig 3) respectively connected to the shanks of the plurality of substrate support rods projecting downward from lower ends of the bores of the vessel body, the arm being arranged under a bottom surface of the vessel body; and an actuator adapted to move the arms vertically.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide proximity pins on the mounting table in the apparatus of Farrens et al, Sekizuka, Chan et al and Parkhe et al as taught by Sada; provide a driving cylinder comprising an arm (plate) connected to the shanks of the

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support rods in the apparatus of Farrens et al, Sekizuka, Chan et al and Parkhe et al as taught by Sada

The motivation for providing proximity pins on the mounting table in the apparatus of Farrens et al, Sekizuka, Chan et al and Parkhe et al is to form a small space between the upper surface of the mounting table and the lower surface of the substrate to prevent friction and thereby a static breakdown from taking place between the substrate and the mounting table as taught by Sada.

The motivation for providing a driving cylinder comprising an arm connected to the shanks of the plurality of substrate support rods projecting downward from lower ends of the bores of the vessel body, the arm being arranged under a bottom surface of the vessel body; and an actuator adapted to move the arms vertically is to provide an alternate and equivalent means of raising and lowering lift pins in the apparatus of Farrens et al, Sekizuka, Chan et al and Parkhe et al as taught by Sada.

Claims 7 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Farrens et al (US 6,780,759) in view of Sekizuka (US 5,368,648), Chan et al (US 6,460,404) and Parkhe et al (US 6,743,473) as discussed in claims 1 – 4 and 12 above and further in view of Ushikawa (US 6,140,256).

Farrens et al, Sekizuka, Chan et al and Parkhe et al do not disclose:

Regarding claim 7, further Comprising bellows respectively surrounding the shanks of the plurality of substrate support rods projecting down from the lower ends of the bores of the vessel body, wherein each of the bellows has an upper end

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hermetically connected to a part, around the lower end of the bore, of the vessel body, and a lower end hermetically connected to the arm.

Regarding claim 14, wherein the driving device includes a piston connected to the substrate support rods, a cylinder surrounding the piston, and a working fluid supply system adapted to supply a working fluid to the cylinder.

Ushikawa discloses: bellows (not labeled, Fig 1) surrounding the lower portion of the lift rods and hermetically connected to the support means 5.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide bellows around the lower part of the lift rods in the apparatus of Farrens et al, Sekizuka, Chan et al and Parkhe et al as taught by Ushikawa.

The motivation for providing bellows around the lower part of the lift rods in the apparatus of Farrens et al, Sekizuka, Chan et al and Parkhe et al is to provide means for sealing the space (holes) between the lift rods and the plate.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farrens et al (US 6,780,759) in view of Sekizuka (US 5,368,648), Chan et al (US 6,460,404), Parkhe et al (US 6,743,473) and Sada (US 6,129,546) as discussed in claims 5 and 6 above and further in view of Kitahara et al (US 6,253,775).

Farrens et al, Sekizuka, Chan et al, Parkhe et al and Sada do not disclose a locking mechanism having a stopper adapted to separately engage with the arm to lock the arm.

Kitahara et al discloses: a locking mechanism (not shown, Column 9, lines 59 – 67) incorporated into the lid 1b is operated by a lid operating device 8 to take the lid 1b off and put the same back on the container 1a.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a locking mechanism to engage with the arm to lock the arm in the apparatus of Farrens et al, Sekizuka, Chan et al, Parkhe et al and Sada as taught by Kitahara et al.

The motivation for providing a locking mechanism to engage with the arm to lock the arm is to adjust and lock the position of the arm in the apparatus of Farrens et al, Sekizuka, Chan et al, Parkhe et al and Sada.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farrens et al (US 6,780,759) in view of Sekizuka (US 5,368,648), Chan et al (US 6,460,404), Parkhe et al (US 6,743,473), Sada (US 6,129,546) and Kitahara et al (US 6,253,775) as discussed in claim 8 above and further in view of Akaike et al (US 6,262,570).

Farrens et al, Sekizuka, Chan et al, Parkhe et al, Sada and Kitahara et al do not disclose: an a second air cylinder actuator adapted to move the cover vertically between a raised position and a lowered position of the cover; and a cover locking mechanism having a stopper adapted to separatably engage with the cover or a member fixed to the cover to lock the cover so as to prevent downward movement of the cover and resultant collision of the cover with the substrate support rods when air to be supplied to the second air cylinder actuator is down.

Akaike et al discloses: an air cylinder 141 of the locking mechanism 32 (Fig 9) when actuated locks the head 24 thereby keeping it in vertical state (Column 11 lines 53 – 67 and Column 12 lines 1 – 18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an air cylinder for a locking mechanism and to move the cover up and down in the apparatus of Farrens et al, Sekizuka, Chan et al, Parkhe et al, Sada and Kitahara et al as taught by Akaike et al.

The motivation for providing an air cylinder for a locking mechanism and to move the cover up and down is for the ease of maintenance and for making the space leak tight in the apparatus of Farrens et al, Sekizuka, Chan et al, Parkhe et al, Sada and Kitahara et al.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farrens et al (US 6,780,759) in view of Sekizuka (US 5,368,648), Chan et al (US 6,460,404) and Parkhe et al (US 6,743,473) as discussed in claims 1 – 4 and 12 above and further in view of Toshima et al (US 2002/0045008).

Farrens et al, Sekizuka, Chan et al and Parkhe et al do not disclose:
Providing an ozone killer connected to the process.

Toshima et al discloses:
Providing an ozone killer 80 (Fig 2, Para 0039) connected to a processing vessel 10 to deplete ozone concentration in the vessel.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an ozone killer for removing ozone from the

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process chamber in the apparatus of Farrens et al, Sekizuka, Chan et al and Parkhe et al as taught by Toshima et al.

The motivation to provide an ozone killer connected to a processing vessel is to remove ozone from the interior atmosphere of the processing vessel as taught by Toshima et al.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farrens et al (US 6,780,759) in view of Parkhe et al (US 6,743,473), Toshima et al (US 2002/0045008) and Ferreira et al (US 5,804,042).

Farrens et al discloses:

Regarding claim 15, a substrate processing vessel 100 (Fig 1) for processing therein a substrate 2 (shown in phantom lines) with a processing fluid, comprising: a vessel body; a cover adapted to be separatably and hermetically joined to the vessel body to define a processing space 172 together with the vessel body; a plurality of substrate support rods 154 incorporated into the vessel body; and a driving device 152 (actuator, Column 6, lines 19 – 24) adapted to vertically move the substrate support rods between a first vertical position and a second vertical position; wherein: each of the substrate support rods has a head adapted to support a substrate from below the same, and a shank extending downward from the head, the vessel body is provided with a plurality of vertical bores each having an open upper end opening into the processing space, and the shanks of the substrate support rods are vertically movably inserted in the bores, respectively,

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said substrate processing vessel has a sealing part 164, 165, 161 and 162 for preventing leakage of the processing fluid from the processing space,

Farrens et al does not teach:

Regarding claim 15, support rods' (pins) heads unable to pass through the bore of the vessel body wherein the heads are configured to close the open upper ends of the bores at the first vertical position.

Parkhe et al discloses:

Regarding claim 15, lift pins 438 (Fig 5, Column 16, lines 9 – 20) having a conical head that fits in the recess to seal the gap.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide conical heads on the pins in the apparatus of Farrens et al as taught by Parkhe et al.

The motivation for providing pins heads is to seal the bores of Farrens et al as taught by Parkhe et al.

Farrens et al and Parkhe et al do not teach: an actuator adapted to move the cover vertically,

Toshima et al discloses:

A lifting mechanism 15 for moving the vessel cover 12 up and down (Fig 3, Para 0041).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a lifting mechanism in the apparatus of Farrens

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et al and Parkhe et al to move the vessel cover up and down as taught by Toshima et al.

The motivation for providing a lifting mechanism in the apparatus of Farrens et al and Parkhe et al to move the vessel cover up and down as taught by Toshima et al for transporting wafers in the processing vessel.

Farrens et al, Parkhe et al and Toshima et al do not teach:

an actuator that includes springs pushing the substrate support rods (pins) upward, a pressing member attached to the cover and adapted to depress the substrate support rods (lift pins) against the resilience of the springs when the cover is lowered.

Ferreira et al teaches an actuator that includes springs 78 pushing the substrate support rods (pins) 74 upward, a pressing member 46 attached to the cover 47 and adapted to depress the substrate support rods (lift pins) against the resilience of the springs when the cover is lowered.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an actuator in the apparatus of Farrens et al, Parkhe et al and Toshima et al as taught by Ferreira et al.

The motivation for providing an actuator in the apparatus of Farrens et al, Parkhe et al and Toshima et al is to provide an alternate and equivalent actuator. Further, it has been held, Substitution of equivalents requires no express motivation. *In re Fount*, 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152, USPQ (CCPA 1967).

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farrens et al (US 6,780,759) in view of Sekizuka (US 5,368,648), Chan et al (US

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6,460,404) and Parkhe et al (US 6,743,473) as discussed in claims 1 – 4 and 12 above and further in view of Kitahara et al (US 6,253,775).

Farrens et al, Sekizuka, Chan et al and Parkhe et al do not disclose a locking mechanism having a stopper adapted to separately engage with the cover to lock the cover.

Kitahara et al discloses: a locking mechanism (not shown, Column 9, lines 59 – 67) incorporated into the lid 1b is operated by a lid operating device 8 to take the lid 1b off and put the same back on the container 1a.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a locking mechanism to engage with the cover to lock the cover in the apparatus of Farrens et al, Sekizuka, Chan et al and Parkhe et al as taught by Kitahara et al.

The motivation for providing a locking mechanism to engage with the arm to lock the arm is to adjust and lock the position of the cover in the apparatus of Farrens et al, Sekizuka, Chan et al and Parkhe et al.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farrens et al (US 6,780,759) in view of Parkhe et al (US 6,743,473), Toshima et al (US 2002/0045008) and Ferreira et al (US 5,804,042).

Farrens et al discloses:

Regarding claim 17, a substrate processing vessel 100 (Fig 1) for processing therein a substrate 2 (shown in phantom lines) with a processing fluid, comprising: a

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vessel body; a cover adapted to be separatably and hermetically joined to the vessel body to define a processing space 172 together with the vessel body;

a plurality of substrate support rods 154 incorporated into the vessel body; and a driving device 152 (actuator, Column 6, lines 19 – 24) adapted to vertically move the substrate support rods between a first vertical position and a second vertical position; wherein:

each of the substrate support rods has a head adapted to support a substrate from below the same, and a shank extending downward from the head,

the vessel body is provided with a plurality of vertical bores each having an open upper end opening into the processing space, and the shanks of the substrate support rods are vertically movably inserted in the bores, respectively,

said substrate processing vessel has a sealing part 164, 165, 161 and 162 for preventing leakage of the processing fluid from the processing space,

Farrens et al does not teach:

Regarding claim 17, support rods' (pins) heads unable to pass through the bore of the vessel body wherein the heads are configured to close the open upper ends of the bores at the first vertical position.

Parkhe et al discloses:

Regarding claim 17, lift pins 438 (Fig 5, Column 16, lines 9 – 20) having a conical head that fits in the recess to seal the gap.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide conical heads on the pins in the apparatus of Farrens et al as taught by Parkhe et al.

The motivation for providing pins heads is to seal the bores of Farrens et al as taught by Parkhe et al.

Farrens et al and Parkhe et al do not teach:

A driving device including arms respectively connected to the shanks of the plurality of substrate support rods projecting downward from lower ends of the bores of the vessel body, the arm being arranged under a bottom surface of the vessel body; and an actuator adapted to move the arms vertically.

And further Comprising bellows respectively surrounding the shanks of the plurality of substrate support rods projecting down from the lower ends of the bores of the vessel body, wherein each of the bellows has an upper end hermetically connected to a part, around the lower end of the bore, of the vessel body, and a lower end hermetically connected to the arm.

Sada discloses: a driving cylinder 84 which includes: arms (plate) 80 (Fig 3) respectively connected to the shanks of the plurality of substrate support rods projecting downward from lower ends of the bores of the vessel body, the arm being arranged under a bottom surface of the vessel body; and an actuator adapted to move the arms vertically.

Ushikawa discloses: bellows (not labeled, Fig 1) surrounding the lower portion of the lift rods and hermetically connected to the support means 5.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a driving cylinder comprising an arm (plate)

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connected to the shanks of the support rods in the apparatus of Farrens et al and Parkhe et al as taught by Sada

It would also have been obvious to one of ordinary skill in the art at the time the invention was made to provide bellows around the lower part of the lift rods in the apparatus of Farrens et al, Parkhe et al and Sada as taught by Ushikawa.

The motivation for providing a driving cylinder comprising an arm connected to the shanks of the plurality of substrate support rods projecting downward from lower ends of the bores of the vessel body, the arm being arranged under a bottom surface of the vessel body; and an actuator adapted to move the arms vertically is to provide an alternate and equivalent means of raising and lowering lift pins in the apparatus of Farrens et al and Parkhe et al as taught by Sada.

The motivation for providing bellows around the lower part of the lift rods in the apparatus of Farrens et al, Parkhe et al and Sada is to provide means for sealing the space (holes) between the lift rods and the plate.

Response to Arguments

Applicant's arguments with respect to claim 1 – 9 and 12 - 17 have been considered but are moot in view of the new ground(s) of rejection. The reference of Kitano et al has been removed and replaced with the reference of Farrens et al (US 6,780,759).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satish Chandra whose telephone number is 571-272-3769. The examiner can normally be reached on 8 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Satish Chandra



Jeffrie R. Lund
Primary Examiner

SC
7/9/2007

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